VOLUME XIV NUMBER 10

THE ELEMENTARY SCHOOL TEACHER

JUNE 1914

EDUCATIONAL NEWS AND EDITORIAL COMMENT

A Rural-School Inquiry

Last fall a commission was appointed by resolution of the Minnesota Educational Association to investigate rural-school conditions in Minnesota. The first of a series of lists of questions to collect information from different available sources has been reported in the *Minneapolis Tribune*. This list is addressed to patrons of the rural schools in each of the eighty-six counties. As a preliminary step in an investigation such an action commends itself. It furnishes an opportunity to determine in a rough way the real feeling of the patrons in regard to the much-discussed question of the efficiency of their schools. Moreover, the questions will have the tendency to make such criticisms as may be given somewhat specific. And not least of all, attention is called through the questions to the possibility of helpful service on the part of the patrons themselves in making their schools what they should be.

The list of questions follows:

Are you satisfied with the progress your children are making in your rural school?

If not, why not?

Is your teacher properly trained?

Is your school well heated, ventilated, and equipped?

What are *you* doing to improve your school?

H. T. M.

The National Commission on Vocational Education

In view of the large amount of federal legislation which is projected for the aid of vocational education, Congress created a Commission on Vocational Education. This commission is charged with the duty of finding out the needs for vocational education and whether or not national grants to stimulate the state are necessary to promote any of the desirable forms of vocational education. The members of the commission are Senator Hoke Smith, of Georgia, *chairman;* Senator Carroll S. Page, of Vermont; Representative D. M. Hughes, of Georgia; Representative S. D. Foss, of Ohio; John A. Lapp, director of the Bureau of Legislative Information, Indianapolis, Indiana; Miss Florence Marshall, principal of the Manhattan Trade School, New York City; Miss Agnes Nestor, president of the International Glove Workers' Union, Chicago; Charles A. Prosser, Secretary of the National Society for the Promotion of Industrial Education, New York; Charles A. Winslow, Bureau of Labor, Washington, D.C.

This commission will report about June 1. In the meantime it has been holding meetings in Washington collecting information of all sorts from different departments of the government and from various national organizations that are interested in the problem. A brief was submitted by Commissioner Claxton, of the Bureau of Education, giving an account of the work of that bureau. The Bureau of Domestic and Foreign Commerce also contributed a report. The Department of Agriculture, which has long been engaged in vocational training in agriculture, presented a full report. The Department of Labor has also for many years been gathering information, and this bureau gave its findings to the commission. Of particular interest to the commission were the facts from the Navy and War Department presented by Commander C. B. Brittain, of the navy, and Captain Douglas MacArthur, of the Engineer Corps of the army, concerning the way in which the army and navy are preparing their men for vocations in the army and navy, which preparation the men carry with them into civil life when their terms of enlistment expire. Both departments have for many years developed this service in order to prepare men for their immediate needs in the vocations directly connected with

the army and navy. It was stated that fully 10 per cent of the enlisted men of the army get training in vocational work.

The commission also has the assistance of many educational organizations, including the National Education Association, the Association of State Universities, the National Manufacturers' Association, etc.

The outcome of this investigation will certainly be a very much larger intelligence about our national problems of vocational education. Practically all of those who have appeared before the commission have been very urgent in their plea that the central government support and co-operate in the development of vocational education. But whatever may be the outcome in the way of legislation of this commission's work, it is certain that we shall have a most interesting report dealing with the general problem.

Children between Fourteen and Sixteen

The following statement of investigations made in Boston with regard to children between fourteen and sixteen years of age is taken from the *City School Circular* of the Bureau of Education:

Superintendent F. B. Dyer, of Boston, has just completed a study of the distribution of Boston children between fourteen and sixteen years of age.

As a result of this study it is made quite evident:

That the number of Boston children between fourteen and sixteen years of age who are attending school somewhere is at least 20 per cent greater than has been generally estimated. The general conclusion reached, from investigations in other large cities and from state-wide studies and reports hitherto made in Massachusetts and elsewhere, has been that about 50 per cent of all children of this age are in school and that about 50 per cent are out of school. It appears from this report that 70.4 per cent of all Boston children of this age are in school and only 29.6 per cent are out of school.

Summarized, the distribution of Boston children fourteen to sixteen years of age is shown to be as follows, based on a canvass made in January, 1914:

1. Attending school: (*a*) in the Boston public schools, January 1, 1914—13,509; (*b*) in the Boston parochial schools and all other Catholic educational institutions in Boston, January 1, 1914—1,705; (*c*) children resident in Boston attending other private schools (61 schools and institutions), January 1, 1914—1,278. Total—16,492 (70.4 per cent).

2. Legally employed in business houses or permitted to remain at home: (*a*) different children holding employment certificates, January 1, 1914—4,555;

(*b*) children holding permits to engage in profitable employment at home, January 1, 1914—86. Total—4,641 (19.8 per cent).

3. Unaccounted for: This number represents the difference between the probable whole number of fourteen- to sixteen-year children in the city and the number known to be in school or legally employed. It includes all of those who were remaining at home prior to September 1, 1913, and who have not returned to school as required by the present law; those who are presumed to be illegally employed; and those who may be classified as "on the streets"—2,298 (9.8 per cent). Total—23,431 (100 per cent).

The assumed number of fourteen- to sixteen-year children in the city, namely, 23,431, varies hardly at all from an estimate based on the average yearly increase (Boston and Hyde Park) for the ten years immediately preceding the period 1910–14 (United States census 1900 and 1910). Taking the latter as a basis of calculation the estimate would be 23,456.

The Los Angeles Situation

The city of Los Angeles is contributing another item to the history of controversies between boards of education and superintendents. It will be remembered by those who have followed the history of this school system that the last superintendent of schools had a good many difficulties in carrying on the work of public education in that city. The present superintendent has been re-elected for a term of years by a majority of the board, but the minority members of the board think it wise to make a public statement in which they charge various deficiencies and lay various irregularities at the door of the present superintendent.

Certainly the outcome of such a controversy as this is not advantageous to education. There ought to be some method of settling these problems of administration in our American schools. One begins to look with some admiration upon the English teachers' organization which would follow up a case of this sort through its representative and have a corporate opinion with regard to the justice or injustice of the position taken on various sides. We have had too many exhibitions in recent years of unjustifiable political meddling with the work of the schools. If teachers cannot defend themselves individually against such political interference, then there ought to be some court of decision including teachers who can bring support to any individual member of the profession who is unjustifiably hard pressed by those who wish for personal reasons to interfere with the work of the schools.

The present writer has absolutely no knowledge of the merits pro or con of the controversy in Los Angeles. The presumption, in view of the history of that school system, is that the superintendent is being interfered with. This presumption ought certainly to bring to the assistance of this superintendent the careful and well-formulated wisdom of his fellows in the profession. He ought to have some means of getting an examination from his point of view of the situation, and the results of this examination ought to be given to the public as of more value than the public announcement made by the minority members of the board.

Tests of Summer Pupils

Superintendent L. J. Montgomery, of the schools of South Bend, Indiana, contributes the following report to the study which was made of children who attended the summer session of the elementary schools in that city last year:

The Courtis arithmetic tests were given to the 6A grade in May and the same children took an examination furnished by Courtis, which in his estimation was as different as the first one, in September. In fact, a great many of the combinations were the same, but arranged in a different order.

In the first school we found that when the entire room was considered the results in September as compared with May were very nearly alike; that is, we found that in addition, subtraction, and multiplication the September report was poorer than the May, whereas the division, the rights in speed reasoning, and the rights in fundamental were better.

To get a better comparison and a safer result we next compared the grades of those in summer school made in May with the grades made in September, and the same in regard to the class of children which did not attend summer school. Thus the children under both conditions are compared with themselves.

We found in the first school those who did not attend summer school to be poorer in September than in May in addition, multiplication, division, fundamental attempts, in copying figures, in speed reasoning, and in fundamental rights, while those who attended the summer school the eight weeks we found to be stronger in addition, multiplication, division, copying figures, fundamental attempts, fundamental rights, and reasoning attempts in September than in May. While the gain is not very great, it is at least noticeable.

In the second school those not in summer school were weaker in September in addition, subtraction, multiplication, division, speed reasoning, speed rights, fundamental attempts, fundamental rights, reasoning attempts, and reasoning rights. In fact, the only place in which these pupils excelled in

September the May grade was in copying figures, while in this same school those who attended summer school were stronger in September than in May in addition, subtraction, the same in multiplication, stronger in division, stronger in copying figures, in speed-reasoning rights, in fundamental rights, and in reasoning rights, while they had depreciated in speed-reasoning attempts, and in fundamental attempts.

We know that ordinarily poorer work is accomplished for the first few weeks in the fall than is done in the spring, and this was proved by the tests given to those children who did not attend summer school. This result is due, of course, to the long summer vacation. Upon consideration of the tests made upon the children who attended the summer session of eight weeks, we find that they were better prepared in September to take up the arithmetic work than they were in May.

The conclusion drawn from this, of course, is that the summer session increased the arithmetical ability of these children, whereas the ability of children usually declines during the summer months.

The following item is clipped from the *Post* of Houston, Texas:

"Chamber of Commerce Day"

"Chamber of Commerce Day" was celebrated in the Houston public schools Monday, talks being made by citizens of Houston in every school.

Twenty-one speakers accepted commissions to address the students on civic patriotism topics, and for a half-hour in every schoolroom in the city the speakers told about civic pride, civic loyalty, and the future in store for the coming men and women of Houston.

The day was arranged by the Chamber of Commerce in conjunction with Superintendent P. W. Horn, and great interest was manifested by everyone concerned.

Gardening by School Children

From numerous clippings which refer to school-garden activities three may be selected which show how widespread the movement is. These items are timely, too, because they set forth very clearly the possibilities of carrying on some regular work during the coming summer. At Erie, Pennsylvania, as reported by the *Dispatch* of that city, sixty garden plots have been donated by owners and more than forty families have applied for membership in a garden club. Before spring is fairly begun it is believed that seventy-five families will belong to the club and more than one hundred and fifty lots will be in use. The work is being conducted under the general supervision of the Associated Charities, and a representative of this

organization is carrying on the work of instructing the children. The children from the sixth, seventh, and eighth grades of schools No. 1 and No. 2 are becoming, it is reported, practical gardeners.

In the Middle West, the city of Indianapolis is setting a good example in this matter. The new Technical High School is organizing the work of the high-school students and is in a general way supervising agricultural education throughout the city, but "in the common schools the simplest elements of gardening are being taught," as reported by the *Indianapolis Star*, "and the students are made familiar with the common garden plants and how to grow them. Simple lessons in fertilization are given and the students raise tomatoes, cabbage plants, lettuce, beans, and other vegetables." Throughout the summer this work is to go on, being somewhat definitely systematized by a summer agricultural course in connection with the Technical High School. There a small rental is to be charged for the use of the garden lots, which rental will be used in improving the ground for later work.

In Portland, Oregon, as reported by the *Journal* of that city, 10,600 boys and girls have enrolled this year in the school-garden contest. This represents a substantial increase over last year. The large amount of gardening which is done in Portland has often been commented upon. The following details show how the ground is secured for this work:

> The work in some places is taking on the character of regular school work. In rooms where the entire school is interested children come for garden work and study twice a week. In other schools most of the work is done outside of school hours. In a great many places ground is limited and can be used only for school-garden demonstration purposes. Thus the children are taught how to conduct their home gardens more efficiently. Ground near other schools is of area sufficient to provide each pupil above the third grade with an individual plot varying from 35 to 108 square feet. Those below the fourth grade work together by rooms. This method has been followed in several schools. Where ground is limited in connection with several other schools a section is assigned to each room and a row or part of a row to each pupil.

Other details are given in the article to which reference has been made, but each of the statements from eastern, middle, and western sections of the country shows the spread of this movement and its

importance. If children who have to stay in the cities during the summer could have the advantage of a little training and also the advantage of the inspiration which comes from this general movement, they undoubtedly would use their summer vacations to much greater advantage and would at the same time be contributing to their knowledge of science and practical activities.

Reforming American Schools on German Patterns

Mr. Miles, chairman of the Industrial Commission of the State of Wisconsin, is known as a critic of the public-school system and a vigorous advocate of industrial education as a substitute for much that is done at the present time in our public schools. The *Beacon*, of Aurora, Illinois, reports an address given by Mr. Miles on March 20 in that city. In this address Mr. Miles is reported as saying: "Of the four greatest manufacturing nations of the world we of the United States are the most stupid. . . . . We can produce more than any other nation. We are the youngest and most self-reliant, but we must first of all cultivate the human resources, which give value to all other resources." He then pointed out the fact that we export great quantities of raw material, but leave it for other nations to work over this material into finished form. "We must sell brains and not materials. We ship cotton to Europe for forty cents a pound and buy it back at forty dollars a pound. We sell steel at one cent a pound and buy it back at two dollars to ten dollars."[1] The deficiency which is here pointed out Mr. Miles would correct by the adoption of a system of industrial education which he has observed in Germany. This thesis he defends by referring to the work of the Munich schools and by repeating the criticism which Dr. Kerschensteiner made of our American schools.

One can sympathize with Mr. Miles's criticism of the American public schools without being driven to any such conclusion as that which he defends. In fact, it is a commonplace with all serious thinkers that no system of education can be borrowed or transferred bodily from one nation to another. If one is tempted to advocate the adoption of the German system for the United States, it is certainly his duty to consider carefully the whole of the German system as well as the national spirit that makes that system possible.

Before we can borrow Germany's industrial education we must consider the relation of industrial education to the other types of education in that country. Whether one wishes to develop a German spirit and system of education in this country is a large problem. In the May issue of this journal the writer of this note recorded some of his observations in the *Volksschule* of Germany. To his own mind these observations make it very certain that we cannot and ought not to adopt in America a system of schools like those which Germany has.

Shortening the Elementary Course

The following news item contributes new evidence that the elementary-school course should be shortened, at least for many pupils:

In a "rapid-advancement class" in Boston, composed of the 36 brightest pupils of the fifth and sixth grades, and placed under the direction of one teacher from entrance to completion of course, the children finished all the work of the sixth, seventh, and eighth grades in a year and a half. Only one hour a day was allowed these pupils for outside study.

School Sites in Chicago

Some time ago widespread currency was given to the charge that the board of education of the city of Chicago had paid excessive prices for certain school sites. Later a subcommittee of the School Sites Investigating Committee found there was justification for the charge. They found that in the last two years so-called "syndicates" had been speculating in school sites. The ground it was known the board wished to buy would be bought up by the "syndicates" and then sold to the board at an excessive figure. The publicity given to the matter and the investigation of the committee seem to have stopped for the time the operations of these "syndicates," but the committee sets forth some recommendations as to future purchases of school sites. They recommend:

Publicity to proposed locations of school sites.

The abandonment of the offering of absurdly low original prices, resulting in condemnation suits.

The appointment of a standing committee to deal directly with property-owners.

The appointment of a standing committee to determine the prices to be paid property-owners.

The employment of real estate experts to report on transactions.

The appointment, by the city council Committee on Schools, Fire, Police, and Civil Service, of a standing committee to report on school sites and the reasonableness of the prices to be paid for them.

H. T. M.

The following is taken from the February number of the *New Zealand Journal of Education:*

An International Book for Children

An international book for children is about to be issued from Tokyo on quite novel lines. It will contain simple articles and stories in French, English, and Japanese, and drawings and photographs of children of many nations. The idea of the editor, Mr. M. Hikosaka, of 33 Abekawamacni, Asakusa, Tokyo, is that by this means a great deal may be done to promote mutual sympathy and understanding between East and West, the period of childhood being deeply impressionable. He is anxious to receive the addresses of kindergartens and similar schools which would accept the magazine as a free gift when issued.

H. T. M.

ECONOMY OF TIME IN ARITHMETIC

WALTER A. JESSUP
College of Education, State University of Iowa

In September of 1913 a questionnaire was sent by Dr. Coffman, of the University of Illinois, and myself to the city superintendents listed in the directory of the United States Bureau of Education, which includes practically all of the cities with a population of 4,000 and over—about 1,700 in all. The same questionnaire was sent to every sixth county superintendent in the United States.

The questions were answered by 52 per cent of the city superintendents, and by 24 per cent of the county superintendents. Returns were received from practically every sized city in the country. However, the larger cities were a little better represented in the matter of replies than were the smaller cities and rural districts. Each section of the country was well represented in returns. Thus it can be said that the data here submitted represent the attitude of one-half of the superintendents distributed quite evenly over the country as to size of city and geographical location.

QUESTIONNAIRE

ECONOMY OF TIME AS RELATED TO MATERIAL USED IN ARITHMETIC

City.....State.....

Underscore once the subjects which should receive slight attention; underscore twice the subjects which should be eliminated: apothecaries' weight, troy weight, furlong, rood in square measure, dram, quarter in avoirdupois weight, surveyors' tables, foreign money, folding paper, reduction of more than two steps, long measure of G.C.D., L.C.M., true discount, cube root, partnership, compound proportion, compound and complex fractions, cases in percentage, annual interest, longitude and time, unreal fractions, alligation, metric system, progression, aliquot parts.

Others.....

Underscore the subjects which should receive more attention than is usually given: addition, subtraction, multiplication, division, fractions, percentage, interest, saving and loaning money, banking, borrowing, building and loan associations, investments, bonds and stocks, taxes, levies, public

expenditures, insurance as protection and investment, profits in business, public utilities.

ECONOMY OF TIME AS RELATED TO THE METHOD USED IN TEACHING

Percentage of recitation time in arithmetic which should be given over to *strictly drill* exercises in each grade.

Grade	1	2	3	4	5	6	7	8	9
Percentage	—	—	—	—	—	—	—	—	—

Percentage of recitation time in arithmetic which should be given over to *rationalization* work in each grade.

Grade	1	2	3	4	5	6	7	8	9
Percentage	—	—	—	—	—	—	—	—	—

Approximate number of minutes *per week* given over to recitations in arithmetic in *your* schools in each grade.

Grade	1	2	3	4	5	6	7	8	9
No. Minutes	—	—	—	—	—	—	—	—	—

Remarks:.....
.....
.....
.....
.....

Signed.....City.....

MANIPULATION OF DATA[1]

The returns were distributed so as to reveal differences, if any, between the responses of school men in the different sections of the country and for the cities of different sizes. Some of the superintendents answered only a part of the questions; hence the totals in the various parts of the report are not all the same. All doubtful answers were eliminated or checked by means of a supplementary inquiry asking for verification of statement.

MATERIAL USED IN ARITHMETIC

The percentage of superintendents who favored elimination was calculated so as to show the difference in attitude toward each of the twenty-five topics suggested. A large percentage favored

[1] This report would have been impossible had it not been for the painstaking statistical work done by a group of students in the graduate seminar in the College of Education, State University of Iowa. The following men assumed the chief responsibility: James Richardson, Chester Buckner, H. W. Anderson.

the elimination of certain formal subjects such as alligation, cube root, unreal fractions, progression, etc., and certain more or less obsolete tables such as paper-folding, surveyors' measure, etc. Table I shows the exact distribution for each subject.

TABLE I

PERCENTAGE OF SUPERINTENDENTS WHO FAVOR ELIMINATION OF THE TOPICS, DISTRIBUTED SO AS TO REVEAL DIFFERENCES IN ATTITUDE IN LARGE CITIES, CITIES AND COUNTIES, AND FOR ALL CITIES

Topic	Cities of 100,000 and Over	Cities and Counties	All Cities
	Per Cent	Per Cent	Per Cent
Apothecaries' weight	72	51	53
Troy weight	75	40	42
Furlong	85	70	72
Rood in square measure	13	19	20
Dram	78	58	60
Quarter in avoirdupois	81	66	68
Surveyors' tables	72	43	47
Foreign money	25	27	28
Folding paper	63	34	35
Reduction of more than two steps	25	21	22
Long measure of G.C.D.	66	33	35
Least common multiple	25	20	22
True discount	66	44	47
Cube root	56	41	46
Partnership	50	23	25
Compound proportion	72	49	52
Compound and complex fractions	28	24	26
Cases in percentage	28	18	20
Annual interest	63	40	41
Longitude and time	13	7	8
Unreal fractions	72	70	74
Alligation	88	82	85
Metric system	41	19	20
Progression	88	63	67
Aliquot parts	9	19	21

Many superintendents who did not go so far as to favor absolute elimination did favor the plan of giving less attention to these subjects. Table II shows the percentage of superintendents distributed for each subject.

Chart I is made up by combining Tables I and II and reveals the attitude of 867 superintendents toward these topics. The cross-hatched portion indicates the percentage of superintendents who favor the elimination of each of these subjects; the shaded portion indicates the percentage of superintendents who favor giving less

attention to each of these subjects; and the unshaded portion indicates the percentage of superintendents who are satisfied with the present status. It is seen from Chart I that the superintendents are overwhelmingly inclined to favor the elimination or at least a lessening of emphasis on these subjects.

TABLE II

PERCENTAGE OF SUPERINTENDENTS WHO FAVOR THE PLAN OF GIVING LESS ATTENTION TO THE TOPICS, DISTRIBUTED SO AS TO REVEAL DIFFERENCES IN ATTITUDE IN LARGE CITIES, CITIES AND COUNTIES, AND FOR ALL CITIES

Topic	Cities of 100,000 and Over	Cities and Counties	All Cities
Apothecaries' weight	31	37	36
Troy weight	32	46	44
Furlong	12	20	19
Rood in square measure	37	39	42
Dram	18	24	23
Quarter in avoirdupois	14	17	17
Surveyors' tables	40	40	40
Foreign money	47	57	57
Folding paper	31	34	35
Reduction of more than two steps	45	46	48
Long measure of G.C.D	47	39	40
Least common multiple	50	44	45
True discount	27	31	31
Cube root	34	39	37
Partnership	39	43	44
Compound proportion	38	33	32
Compound and complex fractions	49	42	44
Cases in percentage	36	34	35
Annual interest	35	32	31
Longitude and time	55	55	56
Unreal fractions	9	17	15
Alligation	4	10	9
Metric system	42	42	44
Progression	12	21	20
Aliquot parts	28	31	32

Analyses of these data indicate that the superintendents of the larger cities are inclined to favor more elimination than are the superintendents of the smaller cities. The returns from the county superintendents who represent the rural schools seem to reveal no striking differences in attitude.

Analyses of the replies on the basis of the geographical sections of the country indicate that there is a slight difference between the North and the South, but this is no greater than the difference to be found between the North Central division and the North Atlantic division.

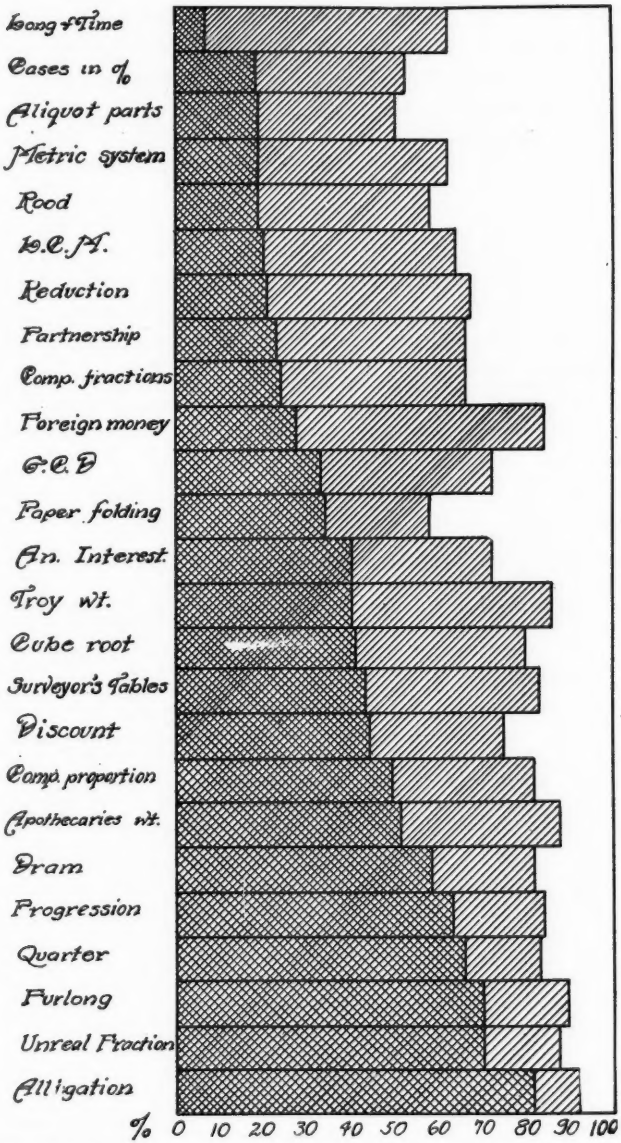

CHART I.—Percentage of superintendents who favor "elimination" or "less attention" (830 cities represented).

After distributing and tabulating the material in order to learn of differences in cities of different sizes in different sections of the country, it seems safe to say that the differences are so slight that Chart I can be taken as a representative measure of the attitude of the superintendents of the country toward the elimination or decrease of attention in regard to the different topics in the list.

ADDITIONAL EMPHASIS

The percentage of the superintendents who favored the plan of increasing the emphasis upon certain subjects was tabulated so as to show the different attitudes toward each of the subjects suggested. A large percentage were in favor of giving more emphasis to the fundamental subjects such as addition, subtraction, multiplication, and division. There was also a very strong sentiment in favor of increasing the emphasis on the applications of arithmetic to the social and economic conditions of the day; such as the saving and loaning of money, taxation, public expenditure, insurance, etc. Table III shows the exact distribution for each subject.

TABLE III

PERCENTAGE OF SUPERINTENDENTS WHO FAVOR THE PLAN OF GIVING MORE ATTENTION TO THE TOPICS LISTED, SO AS TO REVEAL DIFFERENCES IN ATTITUDE IN LARGE CITIES, CITIES AND COUNTIES, AND FOR ALL CITIES

Topic	Cities of 100,000 and Over	Cities and Counties	All Cities
Addition	59	75	75
Subtraction	50	68	69
Multiplication	59	72	72
Division	56	69	70
Fractions	56	66	65
Percentage	31	51	50
Interest	25	41	39
Saving and loaning money	50	61	61
Banking	38	40	39
Borrowing	22	37	37
Building and loan associations	13	46	48
Investments	16	44	44
Bonds and stocks	9	20	20
Taxes	25	53	53
Levies	6	36	35
Public expenditure	28	54	55
Insurance	31	54	55
Profits	28	47	46
Public utilities	34	57	57

The replies were also tabulated on the basis of size of the different cities represented. The superintendents of the larger cities seemed to be less inclined to favor an increase in attention to these subjects. This may be due to the fact that these cities are already giving more emphasis to these subjects than are the small cities.

The replies were tabulated on the basis of the geographical sections of the country. Only a slight difference was found in this particular. The South is perhaps slightly better satisfied with present conditions. This may be due to a situation similar to that in the large city. Chart II, based on the returns from all cities, seems safely to represent the present attitude toward the increased emphasis upon these topics. The shaded portion indicates the percentage of superintendents who favor giving more attention to each of these subjects.

POSSIBLE ECONOMY OF TIME

In connection with the special problem in which the committee is interested—namely, to find out if conditions are favorable for effecting an economy of time by means of the elimination of certain subjects, or by means of reducing the time being given these subjects—it seems reasonable to say that the time gained from this elimination or decreased attention to the twenty-five foregoing subjects may wisely be given to the seventeen subjects which demand more attention. While it is true that it is impossible to say how much time will be saved through this change in emphasis, it should be borne in mind that the superintendents overwhelmingly favor increased emphasis on the fundamental divisions of arithmetic—addition, multiplication, subtraction, and division. Surely, with more thorough instruction in these fundamental subjects, a distinct saving of time might be gained. It should be noted that the method of learning most of the twenty-five subjects is through memory, while the method of learning the new subjects is, with the exception of the fundamentals, largely through thinking or rationalization. It is believed that the superintendents may wisely adopt the plan of lessening the emphasis upon the twenty-five subjects and uniformly increasing the emphasis on the seventeen subjects. Surely, this is in the direction of a more *economical use* of time.

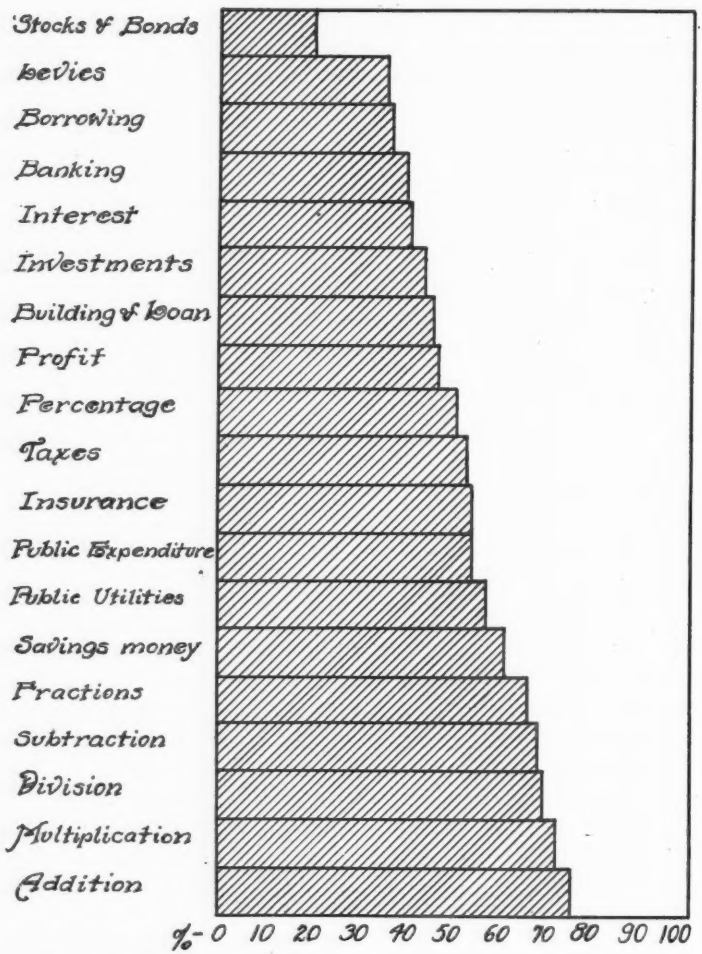

CHART II.—Percentage of superintendents who favor giving more attention to each of these topics (830 cities represented).

AMOUNT OF TIME GIVEN TO THE RECITATION OF ARITHMETIC

Reports were received from 630 superintendents showing the actual time distribution for the recitation in arithmetic in each grade in each city. The wide variation found in time expenditure is shown in Table IV. This table should be read as follows: in

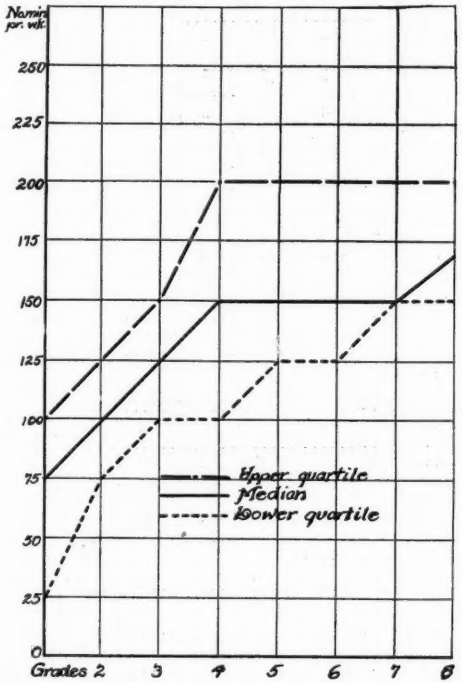

CHART III.—Showing median and quartile distribution of time per week given over to recitations.

the first grade 136 cities allow no time for arithmetic, 7 allow 15 minutes per week, 18 allow 25 minutes per week, and so on down the column. (Extreme cases were verified by supplementary correspondence, so that the variations here indicated are truly descriptive of variations in practice.)

Chart III shows graphically the variation and the central tendency in practice. It is seen that the median time spent in

TABLE IV

No. Minutes per Week	Grades								
	1st	2d	3d	4th	5th	6th	7th	8th	9th
0	136	31	4	.....	.....	.....	.....	24	439
15	7	2	.....	.....	.....	.....	.....	.....	.....
20	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	18	1	1	1	1	.....	.....	.....	.....
30	10	7	5	1	.....	1	1	1	.....
35	1	.....	.....	.....	.....	.....	.....	.....	.....
40	6	4	2	5	2	1	.....	1	2
45	.....	.....	.....	.....	.....	.....	.....	.....	.....
50	99	36	3	1	4	4	2	2	.....
55	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	27	22	10	5	3	4	5	5	4
65	1	.....	.....	.....	.....	.....	.....	.....	.....
70	3	3	1	1	1	1	2	1	1
75	103	127	59	12	4	.....	.....	2	.....
80	6	5	10	11	2	3	1	1	1
85	.....	.....	.....	.....	.....	.....	.....	.....	.....
90	5	6	12	3	4	2	3	3	2
95	.....	.....	.....	.....	.....	.....	.....	.....	.....
100	108	83	156	129	71	31	14	10	3
05	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	1	1	6	5	3	.....	.....	2	1
15	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	6	10	13	13	12	19	22	18	4
125	17	40	90	113	132	109	59	36	5
30	.....	3	4	5	6	9	3	.....	2
35	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	.....	.....	2	4	6	1	9	8	2
45	.....	.....	.....	.....	.....	.....	.....	.....	.....
150	53	66	98	129	158	196	210	192	30
55	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	1	2	4	4	6	2	7	8	5
65	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	.....	.....	2	3	3	1	.....	2	.....
175	6	8	9	20	31	28	35	37	6
80	2	5	6	3	5	9	16	15	4
85	.....	.....	.....	.....	.....	.....	.....	.....	.....
90	.....	1	.....	.....	.....	1	.....	.....	.....
95	.....	.....	.....	.....	.....	.....	.....	.....	.....
200	11	33	54	56	52	72	96	121	60
05	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	3	2	.....	1	.....	2	5	7
15	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	1	1	2	1	1	1	2	2
225	4	10	25	19	22	28	31	38	27

TABLE IV—*Continued*

No. Minutes per Week	Grades								
	1st	2d	3d	4th	5th	6th	7th	8th	9th
30	.....	.....	.....	1	1	2	2	2	.....
35	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	.....	4	8	8	4	4	4	7	1
45	.....	.....	.....	.....	.....	.....	.....	.....	.....
250	1	9	25	39	51	51	45	34	13
55	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	.....	1	.....	1	1	2	2	2	.....
65	.....	.....	.....	.....	.....	.....	.....	.....	.....
70	.....	.....	1	1	4	3	2	1	1
275	.....	2	2	8	7	9	8	5	1
To 300	.....	4	14	24	30	30	38	33	5
To 350	.....	.....	.....	3	2	3	7	8	2
To 450	1	1	1	.....	.....	.....	2	3	.....

the first grade for the United States as a whole is 75 minutes; for the second grade, 150 minutes; for the third grade, 125 minutes; for the fourth, fifth, sixth, and seventh grades, 150 minutes; for the eighth grade, 165 minutes. This means that one-half of the cities spend this amount of time or more in the various grades, and one-half this amount of time or less. The 25 percentile shows that one-fourth of the cities spend 25 minutes or less in the first grade; 75 minutes or less in the second grade; 100 minutes or less in the third and fourth grades; 125 minutes or less in the fifth and sixth grades; and 150 minutes or less in the seventh and eighth grades. Again, the upper quartile brings out the fact that another fourth of the cities spend 100 minutes or more in the first grade; 125 minutes or more in the second grade; 150 minutes or more in the third grade; 200 minutes or more in the fourth, fifth, sixth, seventh, and eighth grades. Thus, from the foregoing analysis it may be seen that some spend relatively far more time than others on arithmetic. Comparison of the 157 cities spending the greatest amount of time with the 157 cities spending the least amount of time indicates that already many of these cities are making headway in the economy of time. May we not look to these cities for suggestions? If one-fourth of the cities can get satisfactory results with an expenditure of from 5 to 20 minutes per day or less in the

first to fourth grades, there is reason for inquiry as to the accomplishment of cities which spend from 20 to 40 minutes or more per day during the first to fourth grades. Again, if one-fourth of the cities are able to get satisfactory results in from 20 to 30 minutes per day or less in the fifth to eighth grades, certainly we have cause to question the reason why another fourth of the cities spend from 40 to 60 minutes or more per day in these grades. On the whole, it seems safe to say that the wide variation of recitation time in the various cities of the United States suggests the possibility of attempting to effect an economy of time by means of standardizing the number of minutes in the recitation period.

A comparison of the actual results obtained in cities giving a large amount of time to the recitations in arithmetic with the cities giving a small amount of time would be invaluable in arriving at this standard amount of recitation time for each grade. It may be said, however, that practically all of the investigations which have been made thus far on this subject indicate that there is less relation between the time expenditure and the achievement than many have supposed. In other words, from these investigations, we have no reason to expect that city A which gives twice as much time as city B to arithmetic will get results in the same proportion.

It would seem that the conservative superintendent who is spending a relatively large amount of time on arithmetic might safely reduce the time at least to the median for the country for each grade. The less conservative superintendent might reduce the time to the 25 percentile without endangering his school, while the radical superintendent might join the 157 who spend still less time on the arithmetic recitation. Thus, the 50 per cent of the cities spending the most time might simply join the 50 per cent spending the least time. Surely, this plan need not frighten even the most cautious, because half of the cities have already tried out the reduction plan.

It is noteworthy that the North Atlantic and South Atlantic states spend from 25 to 50 per cent more time in arithmetic than do the cities in the other parts of the country. It would be interesting to compare the arithmetical efficiency of the schools in the different sections.

Large cities seem to give more time to arithmetic recitations than do smaller cities, although the difference is not great. The county superintendents reporting on rural schools report a very much smaller proportion of time given to the arithmetic recitation. This is, no doubt, due to the difference in the organization of the daily program in the rural schools.

However, these differences in practice are not so great as to make it impossible for the adoption of the sliding standard suggested above. No section or city differs so much from the central tendency as to make it difficult to work toward some part of the lower half of the curve of time distribution for recitations in each grade.

DISTRIBUTION OF TIME AMONG THE DIFFERENT GRADES

It is interesting to note that the median time distribution for the grades shows a regular increase in the time given to the recitation in the classes up to the fourth grade. Chart III shows this clearly. For example, the median for the first grade is 75 minutes per week; for the second grade, 100 minutes per week; for the third grade, 125 minutes per week, and for the fourth grade, 150 minutes per week; beyond which grade there is no increase.

Certain sectional differences are found. For example, the median time in the North and South Atlantic states increases up to the seventh grade which is the maximum; while the median time in the North Central, South Central, and Western states reaches a maximum in the sixth grade. Analysis of the data indicates that the large city gives more time to arithmetic in the sixth and seventh grades than in the eighth, which is contrary to the practice in smaller cities. Such variation in practice simply emphasizes the possibility of effecting economy of time through the widespread adoption of a standard for the recitation time as suggested above.

PERCENTAGE OF RECITATION TIME GIVEN OVER TO DRILL

The superintendents were asked to make a tabular statement showing the percentage of recitation time in each grade given over to drill. Analysis of these returns revealed a wide variation in practice. Chart IV shows graphically the situation in terms of medians and quartiles for 564 cities.

It should be noted that the median percentage of time given to drill in the city schools begins in the first grade at 43 per cent, increasing to 53 per cent in the third grade, and decreasing steadily from then until the close of the eighth grade, which means that one-half of the cities spend this percentage or more of the recitation time in drill and one-half spend this percentage or less in each grade. The wide variation in practice is revealed by comparing the line which indicates the lower quartile with the line which indicates the upper quartile. That is to say, one-fourth of the cities spend 25 per cent of recitation time or less in drill in the first grade, 35 per cent or less in the third grade, decreasing to 5 per cent or less in the eighth grade; while one-fourth of the cities spend 80 per cent or more of the time in drill in the first grade, and 25 per cent or more in the eighth grade. The same variation exists in the country schools. These answers are significant in that they express the idea which the school superintendents and teachers have in regard to the emphasis which should be placed on drill in each grade. They clearly show that the distribution of time in the recitation between drill work and the so-called rationalizational work is not standardized.

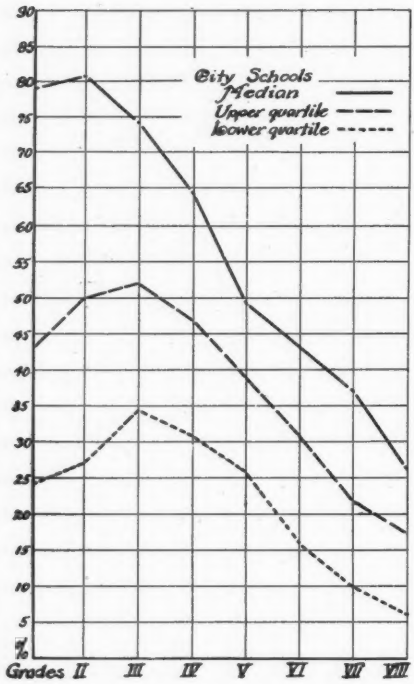

CHART IV.—Showing the median percentage of time given over to *strictly* drill work in the recitations in each grade (564 cities).

We have no adequate means of evaluating the comparative arithmetical efficiency obtained in the schools differing in the

amount of time given over to drill. However, it would seem safe to say that if one-fourth of the cities are devoting 80 per cent or more of the recitation time in the third grade to drill, 50 per cent or more in the fifth grade, and 25 per cent or more in the eighth grade, we should inquire into the effectiveness of the arithmetic teaching in the 140 cities devoting 35 per cent or less of the recitation time in the third grade to drill, 26 per cent or less in the fifth grade, and 5 per cent or less in the eighth grade. In other words, such wide variation suggests the *possibility of waste in the method* at this point.

A thoroughgoing comparison of results attained in cities with widely different standards for the time given to drill would be of great value in connection with constructive recommendations. The scientific investigations on the value of drill in arithmetic have thus far been confined to a narrow range of time, grades, and other conditions. However, the results of these investigations have led to the conclusion on the part of the investigators that drill within the limits of their investigation is of decided value.

In the absence of scientific data for the evaluation of the different degrees of emphasis on drill, it is of importance to know the central tendency of existing practice based on the experience in hundreds of cities. A conservative view will no doubt tend toward the *adoption of a standard such as the median for the whole country* unless local conditions offer some specific reason to do otherwise.

Analyses of the replies on the basis of the size of cities represented revealed only slight difference in the time distribution for drill in the cities of different sizes.

Further analysis of the returns reveals the difference in different sections of the country. The North Atlantic section stands out in striking contrast to the South Atlantic section in that in the North a very much higher percentage of time is devoted to drill in the first three grades than in the South. It would be of interest to compare the arithmetical achievement in the schools of the North Atlantic division with the schools of the other sections where very much less emphasis is placed on drill in these grades.

It is significant that there is great agreement in regard to the emphasis placed on drill in the three lower grades. This is true not only for the country as a whole, but it is also true for cities of

different sizes and for the different sections of the country. *Experience seems to have become standardized in regard to stage of emphasis if not as to degree of emphasis.*

SUMMARY

This study reveals the fact that there is an overwhelming tendency on the part of half of the superintendents in this country in favor of either eliminating or lessening the attention to be given to certain subjects in arithmetic such as alligation, cube root, unreal fractions, progression, and certain obsolete tables such as folding paper, surveyors' tables, etc. Again, it reveals an overwhelming attitude in favor of increased emphasis on such fundamental subjects as addition, multiplication, subtraction, and division. There is also a decidedly strong disposition to favor increased emphasis on the application of arithmetic to the social and economic conditions of the day, such as the saving and loaning of money, taxation, public expenditures, life insurance, etc.

The wide variation in the recitation time given to arithmetic as a whole, and in the different grades indicates that many cities are already effecting a large economy of time in this particular. *It is recommended that the 50 per cent of the cities spending the most time reduce this to the amount being expended by the 50 per cent of the cities spending the least time.* This plan would cut the range of practice in two, and still give opportunity for the expression of the conservative and radical points of view. This standard is shown in Chart III.

The wide variation in the percentage of time given to drill indicates the importance of scientific investigations of the relative achievements secured from the different time allotments. The median time allotment in practice now in the different grades throughout the United States most nearly represents the judgment of the school men based on their own experience. It is *suggested that this median percentage of recitation time given over to drill in each grade be adopted as a standard until scientific investigations have proven this to be in error.* This standard is shown in Chart IV.

In conclusion it should be said that this investigation clearly points to the desirability of a study of relative achievements attained in the work in arithmetic in these same schools.

THE MEASUREMENT OF THE EFFICIENCY OF INSTRUCTION IN READING

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One of the leading educational problems of the present day is that of measuring the efficiency of schools. In the past it has been necessary to rely upon opinion in many matters relating to the progress of children in school. There have been no adequate units until recently with which to express educational products. For this reason, the results of educational processes often have been expressed in terms of mere conjecture, which has had small scientific value. An attempt has been made during the last few years, however, to establish standards and units by which scholastic efficiency and progress in educational attainment may be measured in a definite manner and to this end experimental and statistical methods have been applied to the measurement of educational results. Since a large part of the educational practice in the past has had no scientific foundation, the results of much of the teaching have been meager, and since there have been no adequate means of measuring the efficiency of instruction, it has been impossible to determine in any precise manner what real results were being secured. To a certain extent this condition still prevails, and on that account it may be said that one of the great needs in education at the present time is the establishment of units of measurement, standards of attainment, and reliable tests in each subject by which the value of different types of instruction may be scientifically and competently measured.

There is no subject in the school curriculum in which there is a greater need that tests be devised with which to measure the accomplishment of children than reading. It is the purpose in this article to describe a test planned for this purpose which has been used by the writer to measure reading ability in seven New Hampshire school systems. A description of the test, the method

of handling it, and the purpose for which it was designed are given in this article. The results of the test will be given in a future article. It was devised as an experiment to see what could be done in the way of measuring reading ability, and for the purpose of finding out how best it might be conducted. The division of educational investigation of the state educational department with the school system of the state as a laboratory is in charge of the writer and this investigation in connection with reading was undertaken as a part of the regular research work of the department.

The possibility of effectively measuring accomplishment on the part of children in school opens to the school administrator one of the most fruitful fields and one of the most promising lines of progress in the direction of the establishment of more scientific methods of teaching. With an effective means of measuring reading power it will be possible definitely to evaluate methods of teaching reading in terms of the ability of the children to read. Until this can be done the most satisfactory advance in the reconstruction of the method of instruction to secure a more efficient method will not be likely to be made. In order to attack this problem of the pedagogy of reading in a manner most favorable to progress, the method of approach must involve three distinct lines of investigation.

Reading is the greatest tool for thought-getting which an individual may have at his disposal. A comprehensive survey of the needs of the individual as a member of the social group must be made and those specific reading abilities which will function in the most serviceable way as a tool in the life of the individual must be determined. When the social needs of the individual in terms of reading power are set forth clearly in the form of certain specific reading abilities, we shall have a statement of the end to be attained by the educative process as far as this subject is concerned. This is the first great essential to progress in the right direction.

The psychology of reading has been a subject of study by a considerable group of investigators and there is at hand a respectable body of facts relating to the psychology and physiology of reading. Scientific investigation, the aim of which has been to

describe the act of reading, has yielded data which are of great value to the student of experimental pedagogy. From a study of all the known facts at hand in this field the school man is able to establish certain hypotheses in regard to the method of procedure in instruction. These hypotheses will be in the form of tentative principles of teaching. We may now proceed to teach reading in accordance with the body of principles thus established. But even when a survey has been made of every known fact there is no positive assurance that the methods derived and the resulting educational practice are valid. We must have, however, working hypotheses based upon the known laws of learning and on the nature of the mental processes in children, and the most fruitful source of such hypotheses, and about the only one of great scientific value is a study of child nature in all its aspects, for it is universally recognized that knowledge regarding the laws regnant in the physical organism and predominant in the mental life of the child can furnish the only valid foundation for methods of teaching. Studies in educational psychology and experimental pedagogy have been made in large numbers and the results of these studies throw great light on many problems of teaching, especially in indicating the lines along which the most efficient and economical learning is likely to take place. The scientific school man on the basis of the data at his command is able to develop an experimental technique of instruction in the several school subjects.

A third step is necessary in establishing a valid scientific pedagogy of reading. Before we can be assured that our method is in accordance with correct principles it must be evaluated in terms of the ability of the children to read. The results of the method must be measured and it must prove its validity. As the process of evaluation proceeds, elements of efficiency will be found and elements of weakness will be discovered. A process of selection by which the former are selected and retained and the latter eliminated will now ensue, until in due time a new pedagogy of reading will be evolved which will be in harmony with the laws of the most economical learning.

This, in brief, is the method which must be pursued in all school subjects to secure satisfactory advancement in the direction

of the evolution of better methods of instruction, which are so imperatively needed at the present time. The order of procedure must be: a consideration of the social needs of the individual, the formulation of an experimental technique of instruction, and the evaluation, by properly conceived tests, of the various elements which form a part of the instruction, with a constant reconstruction of method until the highest economy and efficiency are attained. The technique of teaching in every school subject must be subjected in this manner to scientific evaluation. This attitude toward problems of educational practice gives a large place to experimental pedagogy and the measurement of educational results. It is highly desirable that variations in the method of the instruction in primary reading be adopted and that systematic measurement of the results be made for the purpose of determining new elements of efficiency. This gradual rebuilding of educational practice is one of the important problems of the day as the great mass of significant facts regarding the mental processes of children and the nature of the learning process accumulates. The existence of this problem makes it imperative that a means of measuring educational products and of evaluating types of instruction be devised.

In determining reading efficiency three factors must be taken into consideration. In the first place, of two readers whose grasp of content is equally great, that reader who can read the larger amount in a given time has greater reading ability. The rate of reading, then, appears to be a very important factor. Again, of two people who can read the same amount in a given unit of time, that one whose grasp of content is greater is the better reader. In this case the reader who can reproduce the larger amount of what he has read and who can reproduce it more correctly is the more efficient. The whole question of reading efficiency reduces to this: the reader who can read the largest amount in a given unit of time, who can reproduce the largest proportion of what he has read, and who can reproduce it most correctly, is the best reader. The three things which must be accurately weighed in order to have a complete measure of reading power are: (1) rate of reading; (2) quantity of reproduction; and (3) quality of reproduction.

The reading tests prepared by the writer to determine the factors in efficient instruction in reading consisted of a printed selection for each of the grades which were tested of about a page and a half, so arranged as to have the form of the two pages of an open book when it lies before the child on the top of his desk. The two selections consisted of simple prose, easily within the comprehension of any child. The length of lines, the size of type, and the form of the page conformed to a correctly printed reading-book. At the time for the test the printed selections were given out by the teacher and placed face down on the top of each child's desk. The directions were then given and talked over until it was certain that every child understood them. Then at a signal from the teacher each child turned his paper over and began to read. At the end of a minute a second signal was given at which each child marked the word which he read last and turned his paper over. The children were now given paper and asked to write all they could remember of what they had read and for this all the time needed was given. When the directions were given the children were told that they would be asked to tell what they read but that it was desired that they read as much as they could and get the thought.

It was now possible to count the number of words which each child read and determine the rate of reading, which was expressed in words per second. Each child's written reproduction was carefully examined and the number of ideas reproduced of the total number read was determined and was expressed in the form of a percentage. For example, in the portion of the selection read by a given child there may have been forty-eight ideas and he may have reproduced twelve of those ideas. The amount reproduced of what he read was, therefore, 25 per cent. This was called quantity of reproduction. The printed selections were in a form especially adapted to the test. The sixth-grade test, for example, was chosen from a book of Indian stories and practically rewritten and put in a form which was convenient for carrying out the test. It was so arranged that the number of ideas in any portion of it could easily be determined. In ascertaining the number of ideas reproduced by each child, to get the measure of quantity, every

idea was counted which was in most respects complete and in general correctly stated, even though some of the less important details were lacking. The reproductions were examined a second time and only those ideas were counted which were entirely correct in every respect and of which every detail was reproduced, though not necessarily in the words of the original. This was called quality of reproduction. We have here the three factors in reading efficiency.

But a measure of these three aspects of reading ability taken separately will not prove satisfactory. One child may have a high reading rate, a high quantity of reproduction, and a low quality. A second child may have a low reading rate and quantity and quality may both be high. It may be difficult to determine which ranks the higher. For example, suppose the averages of one grade are:

Rate of reading, 2.16 words per second.
Quantity of reproduction, 47.62 per cent.
Quality of reproduction, 39.17 per cent.

Let the averages for another grade be:

Rate of reading, 3.19 words per second.
Quantity of reproduction, 31.11 per cent.
Quality of reproduction, 29.97 per cent.

It is difficult to say at a glance just how much more reading ability one has than the other. It is necessary that some unit of measurement be established by which all reading efficiency may be measured. Accordingly a convenient unit was established. The following statement is a definition of it. One unit of reading efficiency is a reading ability in which such a rate of reading in words per second is combined with such a power of reproduction that the product of the number representing the rate and the average of the numbers representing the percentages of quantity and quality is unity. A person who can read at the rate of 0.5 words per second and whose quantity of reproduction is 3 per cent and whose quality of reproduction is 1 per cent has 1 unit of reading efficiency. A reading rate of 0.25 words per second combined with a quantity of 5 per cent and a quality of 3 per cent would also

represent the same unit, as would many other variations of the three factors. Here is an entirely definite unit by which reading efficiency may be expressed adequately in a comprehensible form. There is, of course, no mathematical relation between these figures. This unit is adopted arbitrarily as a convenient means of expressing reading power in definite comparable units. Any child's reading efficiency may be found by taking the product of the number representing reading rate and the average of the numbers representing the quantity and quality of reproduction. In this computation the average of the percentages of quantity and quality, as, for example, 41.15 per cent, is regarded as the number 41.15 and is multiplied by the rate. If the rate in this case was 2.15 words per second, the number of reading units would be the product of these two, or 88.47.

Reading material of different degrees of difficulty will be found, however, and an individual who has the ability to read at a certain rate and reproduce a certain percentage of what he has read in one selection may not have the same reading rate and power of reproduction in connection with matter twice as hard. The unit of reading efficiency must be spoken of in connection with material of a certain degree of difficulty. For this reason a scale needs to be established for reading material which shall represent a considerable number of different grades from very easy to very difficult. When this has been done it will be possible to speak of a unit of reading power as the ability to read at a certain rate and recall a certain percentage of the ideas read, in connection with reading matter of a given degree of difficulty. When we have a scale of this kind it will be possible to establish standards of reading ability for each grade. Without the scale a school man may use in testing a school system prose of any grade of difficulty and it will be possible to measure growth in reading power in any given period, compare different schools in the same system and different types of teaching, and carry on various similar lines of investigation.

The reading tests were given in only the third and sixth grades and a comparatively small number of children was involved, for the reason previously stated, that the tests were given for the first

time as an experiment and it was more convenient to make the first applications of the method with small numbers of children. A little over four hundred children were tested and some fairly definite pedagogical conclusions seem to be warranted from the data, which will be presented in another article. In many of the best schools divisions in reading consist of twenty-five pupils or fewer and it will always be desirable to test small groups of this size and to compare these groups in one school with similar groups in other schools.

The Tables I and II give the results of the tests.

TABLE I

GRADE III

School	Rank	Rate of Reading in Words per Second	Quantity of Reproduction	Quality of Reproduction	Reading Efficiency in Reading Units
A.....	1	2.16	41.66	35.41	83.24
B.....	2	2.71	26.94	22.49	56.98
C.....	3	2.04	27.28	23.59	51.89
D.....	4	1.94	26.35	21.70	46.61
E.....	5	2.64	19.23	15.65	46.04
F.....	6	1.47	29.73	24.11	39.57
G.....	7	1.08	42.82	27.73	38.10
Average...	.....	2.01	30.57	24.38	53.20

TABLE II

GRADE VI

School	Rank	Rate of Reading in Words per Second	Quantity of Reproduction	Quality of Reproduction	Reading Efficiency in Reading Units
A.....	1	3.42	37.77	30.12	116.26
E.....	2	3.40	28.44	22.63	86.82
B.....	3	2.74	32.17	25.05	78.39
F.....	4	3.14	23.87	18.30	66.21
C.....	5	3.19	26.31	13.60	63.66
G.....	6	3.35	20.90	15.12	60.33
D.....	7	2.95	22.15	17.66	58.72
Average...	.....	3.17	27.37	20.36	75.77

The object of the tests was to solve a problem in the pedagogy of reading, i.e., to determine the factors of efficiency in instruction, and it is here that tests of this kind have great value. In each of the seven school systems in which the tests were given reading

is taught in a different way in certain respects, and the teaching was analyzed into its factors and an attempt made to locate those which produced rapid learning or lack of it. The object, in other words, was to test the validity of the various hypotheses on which the teaching was based. It is entirely possible, and, in fact, not difficult, to analyze the teaching of reading in any given school into its constituent elements. For example, the following is the analysis of the teaching in one school in which the tests were given:

1. The teaching of words as wholes, from the beginning, by associating the visual form vividly with the appropriate object, idea, or experience.

2. Extensive quick-perception reading of sentences from the blackboard throughout the first year.

3. Especial emphasis on concentration upon the thought rather than upon words in all the lower grades.

4. Entire absence of phonetic drill in the two lowest grades.

5. Extensive quick-perception drill with perception cards on words, phrases, and sentences as wholes in the lower grades.

6. Class reading entirely at sight.

7. Number of books read per year entirely at sight in class in first six grades as follows: first grade, 7; second, 21; third, 17; fourth, 18; fifth, 15; sixth, 16.

8. Average number of books read per year for silent reading outside of class in the five years above the first grade as follows: second grade, 19; third, 39; fourth, 75; fifth, 61; sixth, 62.

9. A large amount of oral reproduction in the pupil's own words of the thought of what is read. After several pages have been read rapidly at sight in class, various pupils are called upon to reproduce the thought without further reading or study. Practice in rapid silent reading, followed immediately by oral reproduction.

10. In the third grade, beginning about the fourth month, enough phonic analysis of words as they are met in their functional relations in sentences to give the pupils a mastery of the phonic difficulties of the language.

Here are ten entirely definite and tangible factors which are the characteristic features of the instruction in primary reading in this school. The teaching in all of the schools tested has been

analyzed in this manner and the predominant features set forth. By thus analyzing the teaching into its main constituent factors in a considerable number of school systems in which the elements show important variations and by adequately measuring the products of the teaching, the pedagogy of reading can be reduced to its lowest terms and the factors of efficiency accurately determined. For example, to test the value of phonetic drill in teaching, a school system was selected to compare with that mentioned above in which the method of instruction was practically identical, with the exception that a considerable use was made of phonetic drill in the lower grades. In another school system the class reading was all prepared work, i.e., the lessons were read over several times before being read in class. After the factors entering into the instruction in reading in any school have been set forth, the resultant facts on the side of rate of reading, quantity and quality of reproduction, and number of units of reading efficiency may be represented in the form of mathematical expressions and also pictured to the eye by means of graphic curves, surfaces of frequency, and in other similar ways.

Widely different results in the three factors in reading efficiency were found as the products of the different types of teaching, and this is not surprising in view of the varying combinations of conditions which are possible. The rate of reading may be high or low and the quantity of reproduction may be large or small, with a similar variation in quality. As typical examples of what may be found we have the following: Rate may be high and combined with a large quantity and a low quality of reproduction. In another case, the same reading rate may go with a small quantity of reproduction and a quality nearly equal to the quantity. Again, rate may be low and quantity may be large and quality equal to quantity.

Another consideration which has a significant bearing on the evaluation of the method of instruction is that of the correlation of reading rate and power of reproduction. Correlation may be of three kinds: indifferent or positive or negative. Positive correlation exists when power of reproduction increases with reading rate and is complete correlation when it increases in direct proportion

to reading rate. Negative correlation exists when power of reproduction decreases as reading rate increases. When reproduction remains the same regardless of increase or decrease in the rate of reading, correlation is said to be indifferent. These factors may be combined in various ways, of which the following are typical examples: (1) low reading rate, percentage of reproduction large, negative correlation; (2) high reading rate, percentage of reproduction small, negative correlation; (3) high reading rate, percentage of reproduction large, positive correlation. Correlation may be of varying degrees, both positive and negative. It is self-evident that the type of teaching which produces the highest reading rate combined with the largest quantity and the highest quality of reproduction and positive correlation is the most efficient. This means that the group of pupils who are the most rapid readers at the upper end of the curve reproduce a larger percentage of the ideas read. Indifferent correlation indicates that the more rapid readers get equally as great a percentage of the thought as the slower readers, and since they read a larger amount their reading ability is proportionately greater. In negative correlation the more rapid readers reproduce a smaller percentage of the ideas read.

Figs. 1 and 2 are given to show the method of indicating correlation or lack of it. In this particular grade the condition is apparent at a glance. In the first place, reading rate is high and shows that word pronunciation has been mastered. But, on the other hand, the actual quantity of reproduction is small and there is no marked positive correlation of reading rate and quantity of reproduction. Quality of reproduction in this grade also falls a considerable distance below quantity in most cases. In other words, it can be seen at a glance that this is the product of a poor type of teaching, everything else being equal. It is entirely evident that these children are the kind so often seen who can read readily as far as mere word pronunciation goes but who do not apperceive, assimilate, and retain the content of what is read in anything like an efficient manner. When it is remembered that reading efficiency is made up of three factors it will be seen that the deficiency of this type of reading on the side of reproduction more than offsets the

high rate of reading. Had the reproduction curve been a good deal higher or had there been a gradual rise of the curve showing that assimilation was functioning efficiently, this would have been the product of good teaching, for the high reading rate enabled the pupils to read a large amount in a given unit of time.

Reading is about the most deceptive subject in the entire school curriculum and one in which mere opinion regarding efficiency has the least value. The writer recently visited a school in which the reading appeared to be highly efficient. The children could

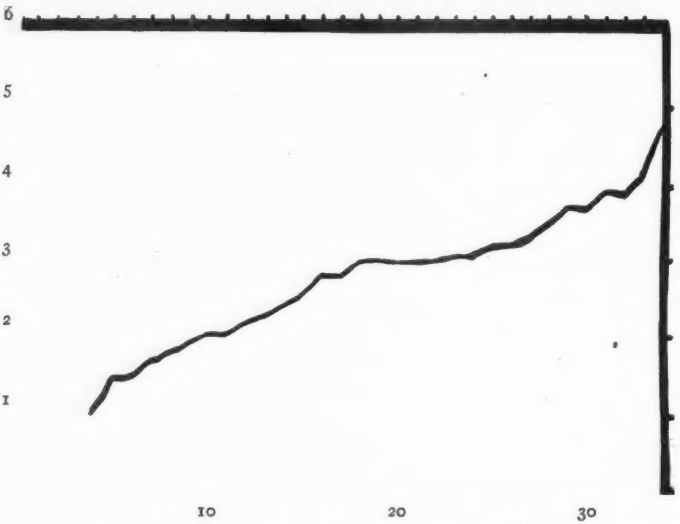

FIG. 1.—Curve representing the rate of reading in a sixth grade of 31 pupils. The scale along the base of the figure represents the number of children in the grade. The scale at the left shows the rate of reading in words per second. The papers were arranged in order of rate of reading.

stand and read a page with the utmost *apparent* ease and fluency and the casual observer would have said that it was reading of the highest competency. Word-pronunciation had been splendidly mastered. It is entirely possible and often happens that reading of this kind is in reality of low grade. Reading is essentially an apperceptive and assimilative process and when these processes

do not function actively reading is not good, although mere word-pronunciation may be perfect. In such reading as this the rate will be high, but it often happens that combined with a high rate of reading are a small quantity of reproduction, a low quality, and negative correlation. Since reading efficiency is a product of

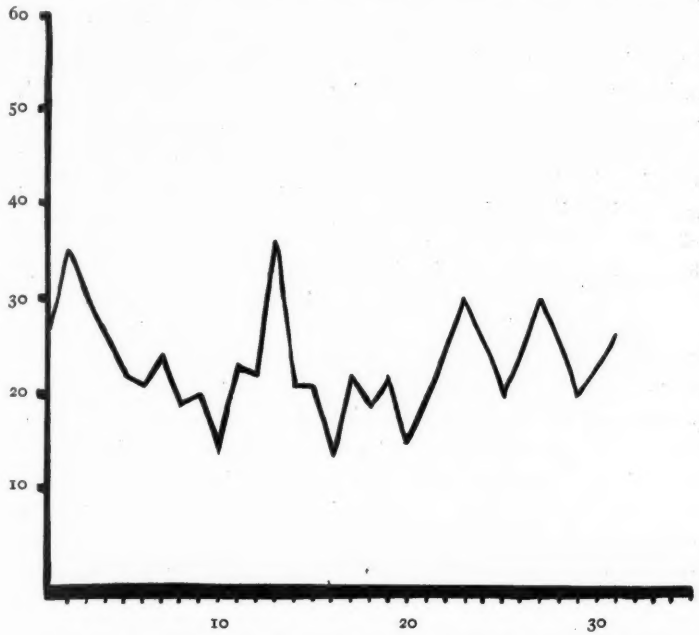

FIG. 2—Curve representing quantity of reproduction of the same children as in Fig. 1, and in the same order. Fig. 1 and Fig. 2 show the correlation of quantity of reproduction and reading rate in this grade. The scale at the left shows the percentage of quantity of reproduction.

several factors, reading of this kind is mediocre in quality. It cannot be pointed out too often that reading is more than mere word-pronunciation. It is feared that some of our prevailing methods of instruction in primary reading are faulty for the reason that undue emphasis is placed on too rapid and too complete mastery of the difficulties of word-pronunciation in the earliest

stages of reading at the expense of apperceptive and assimilative activities and that this type of teaching produces a pronounced word-consciousness and a confirmed habit of reading words instead of thoughts from the printed page which the pupil never completely outgrows and which proves a real hindrance to real thought-getting in later stages of his reading.

It seems clear that by the kind of a test under discussion the factors in reading efficiency may be determined accurately and the various reading methods efficiently evaluated. The data which have grown out of these tests suggest emphatically that the prevailing pedagogy of primary reading is in need of thoroughgoing reconstruction in important particulars. Much of our educational practice in this field is based upon sheer tradition, has insufficient scientific foundation, and fails to give good account of itself under the stress of the test of scientific measurement and evaluation. A new and more correct pedagogy of primary reading must be constructed, based upon the known laws of the learning process. Never can the most satisfactory technique of instruction in this particular be developed until the laws of efficient and economical learning are known and methods of instruction based on these laws. The large question here is: How do we most efficiently and economically perceive, apperceive, and assimilate the printed sentence? The problem involved in learning to read opens the whole field of the psychology and physiology of the reading act and involves the whole question of the psychology of visual perception as related to the printed sentence. A close scientific analysis of all the known facts entering into the complete description of the reading act and the construction of a pedagogy of primary reading based on the facts, followed by a rigid evaluation of the method so established in terms of the ability of the children to read and the gradual determining, selection, retention, and elaboration of elements of efficiency in the instruction and the elimination of elements of weakness until the most effective method possible has been formulated is the only mode of attacking a pedagogical problem which insures the most rapid progress.

BOOK REVIEWS

Educational Psychology. By EDWARD L. THORNDIKE. In three volumes. Vol. I, "The Original Nature of Man." Pp. 326. Vol. II, "The Psychology of Learning." Pp. 452. Vol. III, "Work and Fatigue, Individual Differences." Pp. 408. New York: Teachers College, Columbia University, 1913.

In these three volumes Professor Thorndike has brought together a very large body of material which will be found useful by all students of education. Vol. I gives a careful and detailed account of all of the inherited modes of behavior of man. There is much incidental discussion also of the meaning and value of instincts in education. Vol. II reviews a large number of the studies which have been made of learning processes and gives a full account of the learning curve, together with a theoretical discussion of the characteristics of this curve. Vol. III repeats in the division which deals with individual differences the work that Professor Thorndike brought out a number of years ago under the title *Educational Psychology.* The first part of the volume, which deals with work and fatigue, summarizes the experiments made by Professor Thorndike and others in this field. Each volume is supplied with a copious bibliography and will be useful to anyone who is looking up the literature of education.

It is difficult to select from three large volumes of this type any particular item for special comment. Perhaps the most interesting development which appears in these volumes is Professor Thorndike's new position on the matter of formal discipline. On pp. 416–17 of the second volume he makes the following extraordinary statements: "These experimental facts as a whole, like those concerning memorizing, leave a rather confused impression on one's mind, and resist organization into any simple statement of how far the improvement wrought by special practice spreads beyond the function primarily exercised. They do, however, at least put out of court the old doctrine of a very wide spread of a very large percentage of the special improvement. Possibly nobody ever really believed that the improvement made in reasoning about Latin syntax would spread equally, or almost equally, to all or nearly all varieties of reasoning; but men wrote as if they believed substantially this. Certainly nobody can now believe it in the face of these experiments."

With regard to the future development of this matter, and especially with regard to his own frequently reiterated doctrine of identical elements, Mr. Thorndike says on p. 417: "Many more measurements of the influence of improvement in certain abilities upon the status of others must be made before psychology will be able to predict in general the disciplinary effect of any special forms of practice such as the 'studies' of schools or the industries and games of modern life. At present only rather vague protections against unwise expectations can be given. The general theory of identical elements—that one ability is improved by the exercise of another only when the neurones whose action the former represents are actually altered in the course of the exercise of the latter—is sound, and is useful in guiding thought. However, so little is known about which neurones are concerned in any ability that this general theory does not carry us far."

The changes in opinion which are represented by these statements on the part of Mr. Thorndike will be of great interest to those who all along have felt that his attack upon formal discipline was a little overdone and that the positive educational teachings which issued from his attack were very meager as contrasted with those which he attempted to overthrow.

C. H. J.

Opportunities for Vocational Training in Boston. Compiled by the Committee on Opportunities for Vocational Training; Edited by THOMAS C. MCCRACKEN. Boston: The Women's Municipal League, 1913. Pp. viii+301. $1.25.

While this volume is published as a handbook of information about the opportunities for obtaining vocational training in and about Boston, it will serve a wider usefulness than its name would imply. The book is suitable for those who are seeking to promote vocational education generally, because it is illustrative of the kind of information which might profitably be collected in any considerable urban community. In this way it serves to stimulate local organizations to study their own communities and to inaugurate practical vocational courses, not only in the public schools, but in social settlements, and in the Young Men's and Young Women's Christian Associations. It also will promote home study of vocations. The volume contains a classification of vocational subjects now being taught in educational institutions, which renders it especially valuable as a reference book for students of vocational education and vocational guidance. The book is therefore commended to the attention of teachers, parents, employers, ministers, social workers, and especially to organizations planned to exercise vocational guidance in any of its phases.

FRANK M. LEAVITT

UNIVERSITY OF CHICAGO

The Fundamental Basis of Nutrition. By GRAHAM LUSK. New Haven, Conn.: Yale University Press, 1914. Pp. 62.

This book is a brief popular account of some of the scientific facts with regard to nutrition and diet. It is the work of one of the best experimental physiologists in this country and will serve admirably as a text for a part of the class exercises in home economics in high school or in the upper grades of the elementary school. It is written in a popular style and yet, at the same time, explains clearly some of the scientific terms which are used by the physiologists and dietitians.

After a brief historical introduction, there is a chapter on the constant need of fuel. In this chapter comparative tables are reported showing the amount of fuel which is used by different classes of people and the reason for these variations. Then follows a chapter on the constant need of protein. In this chapter the special importance of the protein elements is pointed out. Then follows a brief chapter on habits of diet, showing again how different peoples under different circumstances cultivate different diets. The evil effects of a one-sided diet are discussed in the following chapter, and, finally, a series of comparative tables sets forth the monetary value of foods. This discussion is followed by a bibliography which gives references to the best literature on the subject.

C. H. J.

Commercial Education in Germany. By FREDERIC ERNEST FARRINGTON. New York: Macmillan, 1914. Pp. ix+258. $1.10.

There have been frequent accounts in English of industrial education in Germany, but these accounts have usually dealt with the trades and with the type of training which prepares for participation in the different trades. Practically nothing has been written with regard to commercial education in Germany. Professor Farrington's book, therefore, makes a distinct contribution to our knowledge of an important aspect of German education.

In America, commercial education precedes in its development industrial training. The explanation of this fact is to be found in the rich natural resources of our own country. We have exported raw materials, but have, until recently, taken only a relatively small share in the manufacturing of these raw materials into finished products. As a nation which deals with the shipment of raw materials we have needed clerks and others who were interested chiefly in transportation and all that attaches to commerce in a narrow sense of that term. Germany, on the other hand, has only recently come to realize the necessity of training for commerce, but she has adopted in her commercial schools the methods which were familiar in her thorough treatment of academic subjects and in the schools which train for industry.

There are lower commercial schools intended for pupils who have enjoyed only an elementary education in the *Volksschule* and there are higher secondary commercial schools for the training of those who have gone through higher institutions. In discussing both grades of schools, Professor Farrington gives in great detail both the course of study and the methods of treating the various subjects. Commercial teachers will find this report, accordingly, very useful in working out the details of their own programs.

The book is a good example of thorough treatment of a single aspect of education. Its value in this respect is very large. If we could have a similar treatment in detail of the way in which the work is carried on in the industrial schools and even in the academic institutions of Germany, we should have a more accurate view than we now get from the somewhat vague general descriptions which are offered in the books that attempt to deal in a single volume with all phases of foreign educational systems.

C. H. J.

BOOKS RECEIVED

AMERICAN BOOK CO., CHICAGO

Essentials of Arithmetic. First Book. By L. D. HARVEY, PH.D. Cloth. Pp. 224.

Essentials of Arithmetic. Second Book. By L. D. HARVEY, PH.D. Cloth. Pp. 507.

G. P. PUTNAM'S SONS, NEW YORK

Byron's "Childe Harold's Pilgrimage." Edited by A. HAMILTON THOMPSON, M.A., F.S.A. Cloth. Pp. 286.

A Book of English Prose. Part I. By PERCY LUBBOCK, M.A. Cloth. Pp. 140.

A Book of English Prose. Part II. By PERCY LUBBOCK, M.A., Cloth. Pp. 181.

The Merchant of Venice (The Granta Shakespeare). Edited by J. H. LOBBAN, M.A. Cloth. Pp. 149. $0.30.

A Midsummer Night's Dream (The Granta Shakespeare). Edited by J. H. LOBBAN, M.A. Cloth. Pp. 118. $0.30.

Exercises and Problems in English History, 1485-1820. Compiled by W. J. R. GIBBS, B.A. Cloth. Pp. 174.

The Purpose of Education. By ST. GEORGE LANE FOX PITT. Cloth. Pp. 83. 2*s.* 6*d.* net.

Salamis. In easy Attic Greek. With Introduction, Notes, and Vocabulary. By G. M. EDWARDS, M.A. Cloth. Pp. 78. Illustrated. $0.45.

Der Zuave. Adapted from *Ein Schloss in den Ardennen.* Edited by G. T. UNGOED, M.A. Cloth. Pp. 62.

PETER REILLY, PHILADELPHIA

Hossfeld's French Grammar. By A. P. HUGUENET. Cloth. Pp. 478. $1.00.

Hossfeld's German Grammar. By C. BRENKMANN. Cloth. Pp. 453. $1.00.

Hossfeld's Gramatica Inglesa. By TOMÁS ENRIQUE GURRIN. Cloth. Pp. 335. $1.00.

Hossfeld's Italian Grammar. By A. ROTA. Cloth. Pp. 340. $1.00.

Hossfeld's Portuguese Grammar. By F. THOMAS. Cloth. Pp. 336. $1.00.

Hossfeld's Spanish Grammar. By T. E. GURRIN. Cloth. Pp. 336. $1.00.

THE MANUAL ARTS PRESS, PEORIA, ILL.

Furniture Design for Schools and Shops. By FRED D. CRAWSHAW, B.S., M.E. Cloth. Pp. 127. Illustrated. $1.00.

Handcraft in Wood and Metal. By JOHN HOOPER and ALFRED J. SHIRLEY. Cloth. Pp. 240. Illustrated. $3.00.

Kitecraft and Kite Tournaments. By CHARLES M. MILLER. Cloth. Pp. 144. Illustrated. $1.00.

HOUGHTON MIFFLIN CO., BOSTON

Summer. By DALLAS LORE SHARP. Illustrated by ROBERT BRUCE HORSFALL. Cloth. Pp. 132. $0.60.

Volunteer Help to the Schools. ("Riverside Educational Monographs.") By ELLA LYMAN CABOT. Cloth. Pp. 141. $0.60.

THE CENTURY COMPANY, NEW YORK

Beyond the Pasture Bars. By DALLAS LORE SHARP. With Illustrations by BRUCE HORSFALL. Cloth. Pp. 160. $0.50.

Practical Homemaking. By MABEL HYDE KITTREDGE. Cloth. Pp. 153.

J. B. LIPPINCOTT CO., PHILADELPHIA

Macdonald's "The Princess and Curdie." Simplified by ELIZABETH LEWIS. Cloth. Pp. 126. Illustrated.

RAND, McNALLY & CO., CHICAGO

A Little Book of Well-known Toys. By JENNESS M. BRADEN. Cloth. Pp. 105. $0.45.

THOMAS Y. CROWELL CO., NEW YORK

The Education of Karl Witte. Edited by H. ADDINGTON BRUCE. Translated from the German by LEO WIENER. Cloth. Pp. 312. $1.50 net.

THE HEER PRESS, COLUMBUS

The Evolution of the Teacher. By FRANCIS B. PEARSON, A.M. Cloth. Pp. 254.

GINN & CO., CHICAGO

Play and Recreation. By HENRY S. CURTIS. Cloth. Pp. 265. Illustrated.

SUPERINTENDENT GOVERNMENT PRINTING, CALCUTTA

Progress of Education in India, 1907-1912. By H. SHARP, C.I.E. Cardboard. Pp. 292. Rs. 2, or 3s.

RUSSELL SAGE FOUNDATION, NEW YORK

Some Conditions Affecting Problems of Industrial Education in 78 American School Systems. By LEONARD P. AYRES, PH.D. Paper. Pp. 22. $0.10.

TEACHERS COLLEGE, NEW YORK

Food for School Boys and Girls. By MARY SWARTZ ROSE, PH.D. Paper. Pp. 15. $0.10.

BOBBS-MERRILL CO., INDIANAPOLIS

For Girls and the Mothers of Girls. By MARY G. HOOD, M.D Cloth. Pp. 157. Illustrated. $1.00 net.

CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, University of Chicago

Bawden, William T. The Richmond convention of the Department of Superintendence. Voca. Educa. 3:361–68. (My. '14.)

Beyer, Thomas Percival. Tragedy and treason in education. Dial 56:338–39. (16 Ap. '14.)

Bloomfield, Meyer. School and employment. Voca. Educa. 3:319–26. (My. '14.)

Brown, H. A. The New Hampshire type of reconstructed rural high school. Voca. Educa. 3:327–37. (My. '14.)

Brown, Henry E. A plan for the reorganization of the American public high school. School R. 22:289–301. (My. '14.)

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Butler, Nicholas Murray. True vocational preparation. Educa. R. 47: 499–501. (My. '14.)

Cates, E. E. The teaching of history in the secondary schools. Educa. 34: 491–500. (Ap. '14.)

Clark, Bertha May. Humanism and efficiency. Educa. R. 47:486–98. (My. '14.)

Davies, G. R. Elements in arithmetical ability. J. of Educa. Psychol. 5:131–40. (Mr. '14.)

(A) defeat for religious education. Lit. D. 48:829. (11 Ap. '14.)

Farrell, Elizabeth E. A study of the school inquiry report on ungraded classes. Psychol. Clinic 8:29–47. (Ap. '14.)

Ford, Guy Stanton. The library and the graduate school. Educa. R. 47: 444–56. (My. '14.)

Frailey, L. E., and Crain, C. M. Correlation of excellence in different school subjects based on a study of school grades. J. of Educa. Psychol. 5:141–54. (Mr. '14.)

[1] *Abbreviations.*—Cent., Century; Educa., Education; Educa. R., Educational Review; El. School T., Elementary School Teacher; Harp. W., Harper's Weekly; J. of Educa. (Bost.), Journal of Education, Boston; J. of Educa. Psychol., Journal of Educational Psychology; Lit. D., Literary Digest; Liv. Age, Living Age; Outl., Outlook; Pop. Sci. Mo., Popular Science Monthly; Psychol. Clinic, Psychological Clinic; R. of Rs., Review of Reviews; School R., School Review; Sci. Am., Scientific American; Tech. World M., Technical World Magazine; Voca. Educa., Vocational Education.

Gathany, J. Madison. The giving of history examinations. Educa. 34:514–21. (Ap. '14.)

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Hall, Walter P. Why I have a bad education. Outl. 106:848–52. (18 Ap. '14.)

Harvey, Fred. The case of Jack the dullard. Good Housekeeping 58:224–30. (Fe. '14.)

Heniger, A. Minnie Herts. Making Bible stories plain. Good Housekeeping 58:331–38. (Mr. '14.)

Hewins, Nellie Priscilla. The doctrine of formal discipline in the light of experimental investigation. J. of Educa. Psychol. 5:168–74. (Mr. '14.)

Judd, Charles H. Some observations in German schools. El. School T. 14:437–44. (My. '14.)

Kingsley, Clarence D. New aims of the modern high school. J. of Educa. (Bost.) 79:458–59, 64. (23 Ap. '14.)

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Leavitt, Frank M. Co-operation of the schools in reducing child labor. Voca. Educa. 3:344–50. (My. '14.)

Lee, James Melvin. Schools of journalism. R. of Rs. 49:591–93. (My. '14.)

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Lyon, Darwin Oliver. The relation of length of material to time taken for learning and the optimum distribution of time. III. J. of Educa. Psychol. 5:155–63. (Mr. '14.)

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Magnus, Philip. Vocationalism. Liv. Age 281:151–60. (18 Ap. '14.)

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Payne, E. George. A recent educational development in Germany—the commercial college. Voca. Educa. 3:369–75. (My. '14.)
Perry, Ralph Barton. The teaching of ideals. School R. 22:334–38. (My. '14.)
Rational geography. Lit. D. 48:897. (18 Ap. '14.)
Russell, James E. Outlines of a practical education. Good Housekeeping 58:339–44. (Mr. '14.)
Sanders, Frederic W. The organization of education. Educa. 34:522–29. (Ap. '14.)
School board as banker for children. Survey 32:67. (18 Ap. '14.)
Scofield, F. A. The function of the intermediate school or the junior high school. J. of Educa. (Bost.) 79:429–30. (16 Ap. '14.)
Selvidge, Robert W. State control of entrance to the industries. Voca. Educa. 3:338–43. (My. '14.)
Senger, Harry L. A comparison of the first-year courses in Latin and German. School R. 22:302–14. (My. '14.)
(The) small college and its president by one of its professors. Pop. Sci. Mo. 84:449–58. (My. '14.)
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Tufts, James H. The teaching of ideals. School R. 22:326–33. (My. '14.)
Warren, Irene. Some books on children's reading and story-telling. El. School T. 14:413–17. (My. '14.)
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Wesley, Charles H. The teacher's point of view in the study and teaching of history. Educa. 34:509–13. (Ap. '14.)
White, E. M. Bergson and education. Educa. R. 47:433–43. (My. '14.)
Williams, Edward H. Temperance instruction in public schools and its results. Survey 32:74–76. (18 Ap. '14.)